CONTENTS

SECTION A—VOL. XI

No. 1—January, 1940

PAGE

Intensity of Raman Lines in Carbon Tetrachloride . . . . . B. POORNACHANDRA RAO 1

On m Consecutive Integers—I . . . . . S. S. PILLAI 6

Generalisation of a Theorem of Mangoldt . . . . . S. S. PILLAI 13

On the Polynomial $\pi_n(x)$ . . . . . R. S. VARMA 21

Use of Mercuric Acetate in Organic Preparations. Part II. Some Experiments on its Use as an Oxidising Agent . . . . . N. V. SUBBA RAO AND T. R. SESHADRI 23

Ultrasonic Velocities and Adiabatic Compressibilities of some Organic Liquids . . J. BHIMASENACHAR AND K. VENKATESWARLU 28

Raman Effect and Chemical Constitution. Influence of Constitutive and Other Factors on the Double Bonds in Organic Compounds. Part III. Effect of the Benzyl Group on the C = O Bond in Esters . . . . . G. V. L. N. MURTY AND T. R. SESHADRI 32

The Distribution of Temperature in the Lower Stratosphere . . . . . M. W. CHIPLONKAR 39

Raman Spectrum and Molecular Association in Formamide . . . . . BISHAMBHAR DAYAL SAKSENA 53

Effect of Crystal Orientation on the Raman Spectrum of Calcite . . . . . S. BHAGAVANTAM 62

No. 2—February, 1940

On m Consecutive Integers—II . . . . . S. S. PILLAI 73

Methods of Generating Differential Invariants with Special Reference to Path-Spaces of Order 2 . . . . V. SEETHARAMAN 81

Effect of Temperature on the Raman Spectrum of Quartz . . . . . T. M. K. NEDUNGADI 86

Colour in Relation to Chemical Constitution of the Organic Salts and Metallic Derivatives of Isonitroso-Diphenyl-Thiohydantoin . . . SIKHIBHUSHAN DUTT AND BRIJ MOHAN SARAN AGARWAL 96

PAGE

A Rapid Volumetric Method for Estimation of Iron and Titanium and its Application to Ilmenite Analysis . . . . . P. R. SUBBARAMAN AND K. R. KRISHNASWAMI 106

A Chemical and Mineralogical Study of the Feldspars from the Mica-Pegmatites of Nellore, Madras . . . . N. JAYARAMAN 160

No. 3—March, 1940

Studies in Naphthalene Series. Part I. Some Properties of 2-Acetyl-1-naphthol and the Synthesis of 2-Ethyl-1-naphthol . . . . . M. AKRAM, R. D. DESAI AND AHMAD KAMAL 139

Studies in Naphthalene Series. Part II. The Synthesis of the *Trans*-form of *Trans*-decalin-2-carboxy-3-acetic Acid . . . . . NAZIR AHMED CHAUDHRY, R. D. DESAI AND G. S. SAHARIYA 145

Studies in Naphthalene Series. Part III. Properties of 4-Acetyl-1-naphthol and the Preparation of 4-Ethyl-1-naphthol . . . . . MAHOMED AKRAM AND R. D. DESAI 149

Studies in Naphthalene Series. Part IV. The Preparation and Properties of 2 : 4-Diacetyl-1-naphthol and 2-Acetyl-4-propionyl-1-naphthol . . . . . MAHOMED AKRAM AND R. D. DESAI 156

Investigations on the Iodide of Sulphur. Part I. Formation of Sulphur Mono-Iodide . . . . M. R. ASWATHANARAYANA RAO 162

Investigations on the Iodide of Sulphur. Part II. Rate of Decomposition and Spectroscopic Studies . M. R. ASWATHANARAYANA RAO 175

Thionyl Iodide. Part I. Formation of Thionyl Iodide . . . . . M. R. ASWATHANARAYANA RAO 185

Thionyl Iodide. Part II. Rate of Decomposition and Spectroscopic Studies . . . . . M. R. ASWATHANARAYANA RAO 201

Synthetic Experiments in the Benzo-Pyrone Series. Part II. Synthesis of Flavono- and Coumarino-7 : 8-Furan-β-ones and Their Derivatives . L. RAMACHANDRA ROW AND T. R. SESHADRI 206

Raman Spectra of Some Carboxylic Acids . . . K. SUNANDA BAI 212

Raman Effect and Crystal Symmetry . BISHAMBHAR DAYAL SAKSENA 229

No. 4—April, 1940

Classical Theory of Spinning Particles . . . . H. J. BHABHA 247

Strychnine and Brucine. Part III. Some Derivatives of Dinitrostrychnic Acid . . . . . RAFAT HUSAIN SIDDIQUI 268

PAGE

Viscosity of Stannic Phosphate Gels during Setting . . . . . MATA PRASAD AND K. V. MODAK 282

Some Organo-Mercury Compounds Derived from Quinine and Cinchonine . . . . N. V. SUBBA RAO AND T. R. SESHADRI 289

Chemotherapy of Bacterial Infections. Part II. Synthesis of Some Sulphanilamide Derivatives and the Relation of Chemical Constitution to Chemotherapeutic Action . . . K. GANAPATHI 298

On Angelescu's Polynomial $\pi_n(x)$ . . . . . N. A. SHASTRI 312

Kinetics of Sol-Gel Transformation. Part III. The Influence of Temperature on the Setting of Some Inorganic Jellies . . . . . HIRA LAL DUBE AND SATYA PRAKASH 318

Kinetics of Sol-Gel Transformation. Part IV. The Influence of Purity of the Sol on the Setting of Ferric Arsenate and Ferric Phosphate Jellies . . . . . HIRA LAL DUBE 331

On Elementary Heavy Particles with Any Integral Charge . . . . . H. J. BHABHA 347

The Analysis of Asymmetrical Experiments with Special Reference to the Partition of Treatment Sum of Squares . . . . . P. V. KRISHNA IYER 369

On Some Theorem of Ramanujan . . . . . F. C. AULUCK 376

No. 5—May, 1940

Reflection of X-Rays with Change of Frequency. Part I. Theoretical Discussion . . . SIR C. V. RAMAN AND DR. P. NILAKANTAN 379

Reflection of X-Rays with Change of Frequency. Part II. The Case of Diamond . . . SIR C. V. RAMAN AND DR. P. NILAKANTAN 389

Reflection of X-Rays with Change of Frequency. Part III. The Case of Sodium Nitrate. SIR C. V. RAMAN AND DR. P. NILAKANTAN 398

Syntheses in the Chaulmoogric Acid Series. Part II. Synthesis of Δ^2-Cyclopentene Carboxylic Acid . . . . . K. V. BOKIL AND K. S. NARGUND 409

Raman Effect in Rochelle Salt Crystals . . T. M. K. NEDUNGADI 413

The Action of Hexamethylenetetramine on the Methyl Esters of Phenolcarboxylic Acids. Part I. The Synthesis of 2: 4-Dihydroxy-5-formyl-benzoic Acid . . R. D. DESAI AND (MISS) K. S. RADHA 422

PAGE

Raman Effect and Chemical Constitution. Influence of Constitutive and other Factors on the Double Bonds in Organic Compounds. Part IV. The Frequency of the Ethylenic Double Bond in Unsaturated Carbonyl Compounds . . . . . G. V. L. N. MURTY AND T. R. SESHADRI 424

On the Representation of a Number as the Sum of the *k*th Power of a Prime and an *l*th Power-Free Integer . K. SAMBASIVA RAO 429

On Warings' Problem for Biquadrates . . . . . F. C. AULUCK 437

Some Aspects of the Physics of Water-Table Rise and Salt Movement in the Soil under Irrigated Conditions . . . . . E. MCKENZIE TAYLOR 451

Classical Theory of Spinning Particles: Errata . H. J. BHABHA 467

On Elementary Heavy Particles with Any Integral Charge: Errata . . . . . H. J. BHABHA 468

No. 6—June, 1940

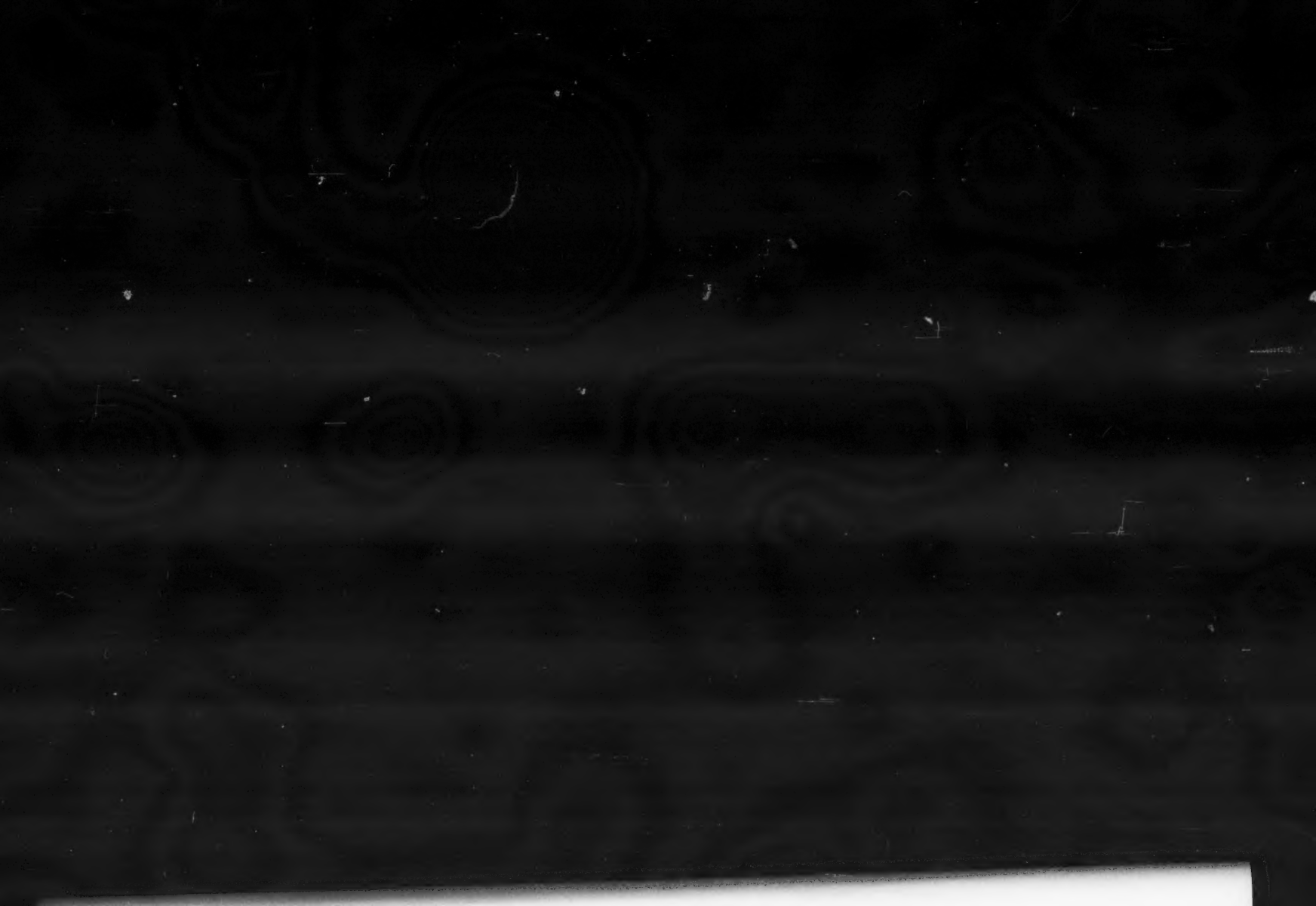
Colours of Stratified Media—I. Ancient Decomposed Glass . . . . . SIR C. V. RAMAN AND V. S. RAJAGOPALAN 469

Colour in Relation to Chemical Constitution of the Phthalein Dyes. Phthaleins of the Mixed Type . . . SIKHIBHUSHAN DUTT 483

Studies in Turbine Geometry—IV. The Topology of Oriented and Non-Oriented Line Elements in the Inversive Plane . . . . . A. NARASINGA RAO 491

A Geometrical Proof of a Theorem on Spinors . . B. RAMAMURTI 497

Generalisation of a Theorem of Pillai-Selberg . . . . . K. SAMBASIVA RAO 502

Chemical Investigation of Indian Fruits. Part I. Bitter Principles of Pamparapanas (Indian Shaddock) . . . . . T. R. SESHADRI AND J. VEERARAGHAVIAH 505

Studies in Chloralamides. Part II. Chloral Nitro and Chloral Bromo-Salicylamides . . . . . (The Late) N. W. HIRWE, (MISS) K. D. GAVANKAR AND B. V. PATIL 512